

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A microwave plasma processing method ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:~~

~~an H-plane slot antenna is provided on in a plasma head, slots of said H-plane slot antenna are being arranged alternately on both sides of the a centerline of the a waveguide with a pitch of $\lambda_g/2$ (λ_g : guide wavelength of the microwave within the waveguide), and a uniforming line is being provided with a distance from said slot slots to an emission end of said plasma head being set to $n \cdot \lambda_g/2$ (where n : represents an integral number).~~

2. (currently amended) A microwave plasma processing method ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:~~

~~an E-plane slot antenna is provided on in a plasma head, slots of said E-plane slot antenna are being arranged along the a centerline of the a waveguide with a~~

pitch of λ_g (λ_g : guide wavelength of the microwave within the waveguide), and a uniforming line is being provided with a distance from said slot-slots to an emission end of said plasma head being set to $n \cdot \lambda_g/2$ (where n : represents an integral number).

3. (currently amended) A microwave plasma processing method for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

a uniforming line is being provided on-the-in a plasma head, said uniforming line is made composed of a material with a high dielectric constant so as to reduce the-a standing wave in the said plasma head.

4. (currently amended) A microwave plasma processing method for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

a uniforming line is provided on in the-a plasma head, said uniforming line is composed of quartz, and an end portion thereof is extended by $1/4\lambda$ (where λ represents free space wavelength within the quartz) so as to reduce the-a standing wave in said plasma head.

5. (currently amended) A microwave plasma processing method for forming in which a linear plasma is formed by using a microwave and for processing an object

to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

 a uniforming line is provided on in the plasma head, an electromagnetic wave absorbing material member with a high dielectric loss is being attached on an end of said uniforming line so as to reduce the-a standing wave in the said plasma head.

6. (currently amended) A microwave plasma processing method for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

 a film-deposition forming gas is passed supplied to the surface of said the object to be processed by down-flowing through a film-deposition forming gas feeding nozzle arranged provided in the-a plasma head.

7. (currently amended) A microwave plasma processing method for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

 a film-deposition forming gas is passed supplied to the surface of said the object to be processed by side-flowing through a film-deposition forming gas feeding nozzle arranged provided in the-a plasma head.

8. (currently amended) A microwave plasma processing method for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

a shield gas feeding pipe is connected for feeding a shield gas to into the a plasma head, a resistance buffer plate being provided for carrying out uniform feeding of the shield gas into the a plasma processing chamber on a downstream side of the shield gas feeding pipe is arranged, and a resistance another buffer plate for carrying out homogeneous discharge exhaust of the gas is being provided on discharge an exhaust side.

9. (currently amended) A microwave plasma processing method according to claim 8, wherein gas shielding is provided in such manner that pressure P_1 in said plasma processing chamber is set to a value lower than pressure P_3 on the an outermost periphery of said plasma head, and the pressure P_3 is set to a value lower than the pressure P_2 near the resistance another buffer plate for carrying out uniform homogeneous gas discharge exhaust , and that whereby the leakage of the gas from the said plasma head is prevented.

10. (currently amended) A microwave plasma processing method according to any one of claims 1 to through 9, wherein said microwave plasma processing method is a microwave plasma CVD processing method.

11. (currently amended) A microwave plasma processing apparatus for in which forming a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under

a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining the while a surface of the object to be processed is maintained at horizontal position with respect to said linear plasma, wherein;

an H-plane slot antenna is provided on in a plasma head, slots of said H-plane slot antenna are being arranged along the centerline of the waveguide with a pitch of λ_g alternately on both sides of a centerline of a waveguide with a pitch of $\lambda_g/2(\lambda_g$: guide wavelength of the microwave within the waveguide), and a uniforming line is being provided with a distance from said slot slots to an emission end of said plasma head being set to $n \cdot \lambda_g/2$ (where n : represents an integral number).

12. (currently amended) A microwave plasma processing apparatus for forming in which a linear plasma is formed by using microwave and for processing an object to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;

an E-plane slot antenna is provided on in a plasma head, slots of said E-plane slot antenna are being arranged along the-a centerline of the-a waveguide with a pitch of λ_g (λ_g : guide wavelength of the microwave within the waveguide), and a uniforming line is being provided with a distance from said slot slots to the an emission end of said plasma head being set to $n \cdot \lambda_g/2$ (where n : represents an integral number).

13. (currently amended) A microwave plasma processing apparatus for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being

moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

a uniforming line is being provided on in the-a plasma head, said uniforming line is made composed of a material with a high dielectric constant so as to reduce the-a standing wave in the said plasma head.

14. (currently amended) A microwave plasma processing apparatus for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

a uniforming line is provided on in the-a plasma head, said uniforming line is made composed of quartz, an end portion thereof is being extended by $1/4\lambda$ (where λ : represents free space wavelength of the microwave within the quartz) so as to reduce the-a standing wave in the said plasma head.

15. (currently amended) A microwave plasma processing apparatus for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the-atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:

a uniforming line is provided on in the-a plasma head, an electromagnetic wave absorbing material member with a high dielectric loss is being attached on an end of said uniforming line so as to reduce the-a standing wave in the said plasma head.

16. (currently amended) A microwave plasma processing apparatus ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:~~

~~a film-deposition forming gas is passed supplied to the surface of said the object to be processed by down-flowing through a film-deposition forming gas feeding nozzle arranged provided in the plasma head.~~

17. (currently amended) A microwave plasma processing apparatus ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:~~

~~a film-deposition forming gas is passed supplied to the surface of said object to be processed by side-flowing through a film-deposition forming gas feeding nozzle arranged provided in the plasma head.~~

18. currently amended) A microwave plasma processing apparatus ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein:~~

a shield gas feeding pipe is connected for feeding a shield gas to into the a plasma head, a resistance buffer plate being provided for carrying out uniform feeding of the shield gas into the a plasma processing chamber on a downstream side of the shield gas feeding pipe is arranged, and a resistance another buffer plate for carrying out homogeneous discharge exhaust of the gas is being provided on discharge an exhaust side.

19. (currently amended) A microwave plasma processing apparatus according to claim 18, wherein gas shielding is provided in such manner that pressure P_1 in said plasma processing chamber is set to a value lower than pressure P_3 on the am outermost periphery of said plasma head, and the pressure P_3 is set to a value lower than the pressure P_2 near the resistance another buffer plate for carrying out uniform homogeneous gas discharge exhaust, and that whereby the leakage of the gas from the said plasma head is prevented.

20. (currently amended) A microwave plasma processing apparatus according to any one of claims 11 to through 19, wherein said microwave plasma processing method is a microwave plasma CVD processing method.

21. (currently amended) A plasma head of a microwave plasma processing apparatus for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;

an H-plane slot antenna is provided on in a plasma head, slots of said H-plane slot antenna are being arranged alternately on both sides of the a centerline of the a

waveguide with a pitch of $\lambda_g/2$ (λ_g : guide wavelength of the microwave within the waveguide), and a uniforming line is being provided with a distance from said slot slots to an emission end of said plasma head being set to $n \cdot \lambda_g/2$ (where n : represents an integral number).

22. (currently amended) A plasma head of a microwave plasma processing apparatus for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;

an E-plane slot antenna is provided on in a plasma head, slots of said E-plane slot antenna are being arranged along the-a centerline of the-a waveguide with a pitch of λ_g (λ_g : guide wavelength of the microwave within the waveguide), and a uniforming line is being provided with a distance from said slot slots to the-an emission end of said plasma head being set to $n \cdot \lambda_g/2$ (where n : represents an integral number).

23. (currently amended) A plasma head of a microwave plasma processing apparatus for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the-atmospheric pressure when the object to be processed is being moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;

a uniforming line is being provided on in the-a plasma head, said uniforming line is made composed of a material with a high dielectric constant so as to reduce the-a standing wave in the said plasma head.

24. (currently amended) A plasma head of a microwave plasma processing apparatus ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;~~

a uniforming line is provided on in the-a plasma head, said uniforming line is made composed of quartz, an end portion thereof is being extended by $1/4\lambda$ (where λ : represents free space wavelength of the microwave within the quartz) so as to reduce the-a standing wave in the said plasma head.

25. (currently amended) A plasma head of a microwave plasma processing apparatus ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the-a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;~~

a uniforming line is provided on in the-a plasma head, an electromagnetic wave absorbing member with a high dielectric loss is being attached on an end of said uniforming line so as to reduce the-a standing wave in the said plasma head.

26. (currently amended) A plasma head of a microwave plasma processing apparatus ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;~~

~~a film-deposition forming gas is passed supplied to the surface of said the object to be processed by down-flowing through a film-deposition forming gas feeding nozzle arranged provided in the a plasma head.~~

27. (currently amended) A plasma head of a microwave plasma processing apparatus ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;~~

~~a film-deposition forming gas is passed supplied to the surface of said the object to be processed by side-flowing through a film-deposition forming gas feeding nozzle arranged provided in the a plasma head.~~

28. (currently amended) A plasma head of a microwave plasma processing apparatus ~~for forming in which a linear plasma is formed by using a microwave and for processing an object to be processed is subjected to processing under the atmospheric pressure or under a pressure near the atmospheric pressure when the object to be processed is being moved by maintaining while the a surface of the~~

object to be processed is maintained at a horizontal position with respect to said linear plasma, wherein;

a shield gas feeding pipe is connected for feeding a shield gas to into the a plasma head, a resistance buffer plate being pr provided for carrying out uniform homogeneous feeding of the shield gas into the a plasma processing chamber on a downstream side of the shield gas feeding pipe is arranged, and a resistance another buffer plate for carrying out homogeneous discharge exhaust of the gas is provided on discharge an exhaust side.

29. (currently amended) A plasma head of a microwave plasma processing apparatus according to claim 28, wherein gas shielding is provided in such manner that pressure P_1 in said plasma processing chamber is set to a value lower than pressure P_3 on the an outermost periphery of said plasma head, and the pressure P_3 is set to a value lower than the pressure P_2 near the resistance another buffer plate for carrying out uniform gas discharge exhaust, and that whereby the leakage of the gas from the said plasma head is prevented.

30. (currently amended) A plasma head of a microwave plasma processing apparatus according to any one of claims 21 to through 29, wherein said microwave plasma processing apparatus is a microwave plasma CVD processing apparatus.

31. (currently amended) A method for manufacturing FPD or a semiconductor device, characterized in that the product is manufactured a film is formed by use of the microwave plasma processing method according to any one of claims claim-1 through 10.